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Editorial

Epidemic keratoconjunctivitis: An overview

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Epidemic keratoconjunctivitis (EKC) is a serious public health issue worldwide. EKC is highly contagious ocular surface infection mainly caused by adenoviruses. About 1% of all ophthalmic consultation in USA are related to conjunctivitis.[1] Adenovirus represents 15% to 70% of all infectious conjunctivitis.[2]

1. About the Virus

Human Adenovirus (HADVs) belongs to the family Adenoviridae, genus Mastadenovirus. It consists of around 130 serotypes out of which 54 types are pathogenic in humans. They are classified into 7 groups and are labeled from A to G. Adenoviruses are non-enveloped double-stranded DNA viruses. It's icosahedral capsids bears several specific antigens. HADV-8, HADV-19 & HADV-37 are responsible for contagious EKC.[3]

Adenoviruses are very stable and are highly resistant to chemical or physical agents evenin adverse pH conditions. This leads to their prolonged survival outside the body and leading to increased chances of transmission. The contagious nature is best explained by considering data of HAdV19 which is viable for up-to 8 days on paper, 9 days on tonometer tips, 10 days on textiles and metal and up-to 35 days on plastics. Therefore, nosocomial spread is quite common in these infections.

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2. Mode of transmission

Main transmitters of viruses are hands and contaminated objects like handkerchiefs, door-knobs, eye drops and medical instruments like tonometer & slit-lamp etc. Virus is transmitted through respiratory droplets and infected body fluids like tear-fluid which can enter the human body via nose, throat and conjunctiva. The viral incubation period ranges from 2-12 days.

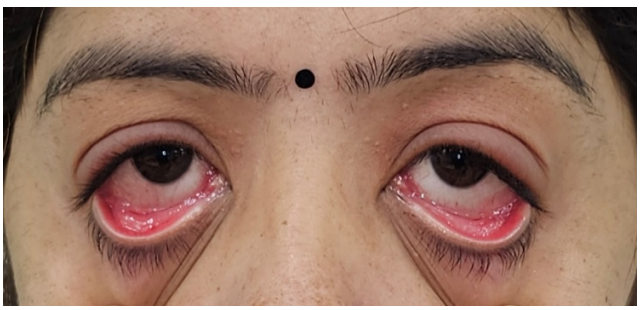

Fig. 1: A female with bilateral EKC infection. Palpebral conjunctival hyperemia with follicles with eyelid edema.

3. Clinical presentations

EKC is an ocular surface infection which manifests as an intense inflammatory reaction with predominant clinical symptoms like redness, irritation / foreign body sensation, watery discharge, blurry vision and

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Fig. 2: A boy with unilateral EKC infection with conjunctival edema and congestion with follicles with eyelid edema.

intolerance to light. The clinical signs are eyelid edema, follicular conjunctivitis, conjunctival hyperemia /congestion (Figures 1 and 2), sub-conjunctival hemorrhage (Figure 3), pseudomembrane formation (Figure 4) and often pre-auricular lymphadenopathy. The corneal involvement is also not uncommon. It can arise from the fourth day onward in the form of multifocal subepithelial infiltrates seen in the chronic stages of EKC. These small epithelial infiltrates tend to enlarge and develop into large nummuli that can lead to visual impairment. EKC presents as unilateral condition but in almost 70% of the cases it becomes bilateral in within a week of the presentation due to hand -to-eye transmission. It is a self limiting infection lasting for about 2 to 3 weeks.

Fig. 3: A young female having unilateral EKC infection with sub-conjunctival hemorrhage.

3.1. Diagnostic evaluations

It is mainly a clinical diagnosis, based on history and presenting signs and symptoms. The gold standard method for EKC diagnosis is detection of adenoviral DNA in conjunctival specimen by polymerase chain reaction (PCR) as it has been proven to be a very specific, sensitive and rapid test.[4] The detection of adenovirus antigen by commercially available rapid tests are less sensitive than PCR technique.

Fig. 4: A man with unilateral EKC infection with membranous conjunctivitis having reduced vision.

3.2. Treatment

There is no definitive treatment for EKC, the treatment remains purely symptomatic as EKC is a self limiting disease. Cool compresses and artificial tears, supplemented with topical antibiotics to prevent or treat superinfection are the mainstay of treatment. The use of calcineurin inhibitors like topical cyclosporine-A has shows better results in treatment of chronic sub-epithelial infiltrates or nummuli.[5] Some physicians prefer adding topical corticosteroids especially in cases of acute EKC where there is threat of incapacitating visual loss from persistent subepithelial infiltrates and its progression to pseudomembranous conjunctivitis and iridocyclitis.[6] But steroids are double edged sword as even though it reduces inflammation and decreases corneal involvement but it has been found that it increases viral replication and titres.

There is no definitive antiviral treatment for EKC but certain drugs have reported clinical success like topical alpha-interferon, cidofovir, PVP-iodine 5%.[7–9] Sundmacher et al found that Interferon eye drops might prevent infection in exposed persons.[10]

Off label use of antiseptic povidone-iodine ophthalmic solution is being employed as a means to decrease spread of EKC. It can rapidly inactivate adenovirus within 1 minute of exposure. Some studies have found that 2% solution can reduce the duration of infectivity.

4. Prevention

Basic control measures can be promoted from both patient's and hospital's side to prevent snowballing of the disease into an outbreak. Ophthalmic health care workers should always wear gloves while handling the patient. Proper hand hygiene should be maintained between examination of two patients along with frequent disinfection of instruments and surfaces. Employ mint of single-use disposable devices for examination if possible. Disinfection of the instruments with the help of isopropyl alcohol, 30% alcohol solution or sodium hypochlorite solution. Patient identification and isolation is a must to contain the spread. Health professionals should wear protective eyewear and should be asked to take leave if infected. [11]

5. Conclusion

EKC is a very common ocular infection which should be dealt very cautiously with accurate diagnosis and prevention of transmission. A judious case-by-case approach should be preferred to prevent drastic visual consequences.

6. Conflict of Interest

None.

7. Source of Funding

None.

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